

REMARKS

This reply encompasses a bona fide attempt to overcome the rejections raised by the Examiner and presents amendments as well as reasons why the applicants believe that the claimed invention is novel and unobvious over the closest prior art of record, thereby placing
5 the present application in a condition for allowance.

Regarding Claim Status

Claims 7-10 and 20-22 were pending. Claims 7, 8, 10, 20, and 21 were rejected. Claims 20-22 are particularly amended herein to overcome the rejections and are therefore respectfully
10 submitted to be allowable. Claim 20 was also objected to and is amended herein to obviate this objection.

Claim 22 was objected to as being dependent upon a rejected base claim, but has been indicated as would be allowable if rewritten in independent form including all of the
15 limitations of the base claim. The Applicants thank the Examiner for pointing out the allowable subject matter. Claim 22 is accordingly rewritten in independent form including all of the limitations of the base claim 7. There were no intervening claims. Claim 22 is therefore submitted to be allowable.

20 Claim 9 has been allowed. By this Amendment, claims 7-10 and 20-22 are pending.

Regarding Claim Objections

Claim 20 was objected to because under the definition of A, phthalic, isophthalic, terephthalic, and dithiopropinoic are spelled incorrectly. Claim 20 has been amended to correct these spellings.

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Regarding 35 U.S.C. § 112 Rejections

Claim 20 was rejected under 35 U.S.C. § 112, first paragraph, because eicosanic acid, polythiodiacetic, polythiodipropionic and polydithiodibutric are not supported by the specification. Claim 20 has been amended to overcome this rejection.

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Regarding 35 U.S.C. § 103 Rejections

Claims 7-8, 10, 20, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilson (U.S. Patent No. 5,342,724) in view of Weihe (U.S. Patent No. 2,221,418). It is respectfully submitted that claims 7-8, 10, 20, and 21 are not obvious from the combination of Wilson and Weihe and therefore should be allowed.

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The examiner states that it would have been obvious to one of ordinary skill in the art at the time of the invention to use bis(hydroxyethyl) disulfide instead of bis(hydroxypropyl) disulfide as the disulfide containing diol as it would be expected that these two compounds would have similar properties. Applicants respectfully submit that these two compounds do not have similar properties with regards to their use in the present invention. According to U.S. Patent No. 2,582,605 by Richter et al., materials containing beta-hydroxyethyl sulfide groups, like bis(hydroxyethyl) disulfide, are peculiar in that they have “unusually reactive hydroxyl groups, [which] will readily condense with compounds containing hydroxyl groups

to form mixed ethers". See column 1, lines 24-32. The unusual properties of these materials are further illustrated in the classical fundamental book by N. Kharasch, "Organic Sulfur Compounds, Vol. 1 (Pergamon Press, NY, Oxford, London, Paris, 1961). In this book (page 270, last paragraph), it is stated that "dithiodiglycol can be converted into a polymeric 5 disulfide containing an ether linkage by taking advantage of the enhanced reactivity of a hydroxyl group on a carbon beta to a sulfur atom. This unusually easy cleavage, from a carbon atom, of a primary hydroxyl group was first noted by Bennett and Hock (J. Chem. Soc., 477-483, (1927) in the self-condensation of 2-mercaptopethanol".

10 The unusual reactivity of beta-hydroxyethyl sulfide groups is uniquely taken advantage of by the processes described in the present invention. In contrast, if bis(hydroxyethyl) disulfide were mixed with a dibasic acid under the conditions described by Wilson, the product would not contain any polythioesters, but instead would be the solid "balsam" of undetermined composition described by Weihe. In other words, the process as described by Wilson, using 15 bis(hydroxyethyl) disulfide rather than bis(hydroxypropyl), would **not** give compounds described in the formulas set forth in the claims. Therefore, applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to use bis(hydroxyethyl) disulfide to make polysulfur-containing polymeric ester compositions and their polymers.

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The examiner further states that bis(hydroxypropyl) and bis(hydroxyethyl) are equivalent because they are both listed in the list of compounds useful in the invention by Weihe.

Applicants respectfully submit that while both compounds may be useful for the invention by Wiehe, they would not both be useful for the invention as described by Wilson, see above.

The examiner further states that Wilson teaches the use of diacids, such as adipic acid and 5 succinic acid, and a catalyst, such as zinc acetate, to make polyesters. In addition, the examiner states that Wilson teaches the use of a polyfunctional modifier, such as dimethylolpropionic acid, in the production of polyester. Applicants respectfully submit that while the present invention has reagents in common with Wilson, the unique use of bis(hydroxyethyl) under the conditions taught by the present invention to make polysulfur-10 containing polymeric esters is novel and unobvious. Claim 21 has been amended to more specifically define the conditions under which di(hydroxyethyl)disulfide, succinic or adipic acid, an acid catalyst, and dimethylolpropionic acid are reacted to form the compositions claimed in claim 21.

Conclusion

For the foregoing reasons, it is respectfully submitted that the invention as set forth in independent claim 7 and amended independent claims 20 and 21 recite subject matter that is patentably distinct, under 35 U.S.C. § 103(a), from Weihe and Wilson. Accordingly, claims 5 7, 20 and 21 are submitted to be patentable and therefore should be allowed. Claims 8 and 10 are submitted to be patentable as they are dependent on independent claim 7. Claims 9 and 22 have been indicated as would be allowable.

This Reply is submitted to be complete and proper in that it places the present application in 10 a condition for allowance without adding new matter. Favorable consideration and a Notice of Allowance of all pending claims 7-10 and 20-22 are therefore respectfully solicited.

Respectfully submitted,



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